AB32 Early Action Measure

Refrigerant Management for Stationary Equipment

Brief for Public Working Group
May 29, 2008

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Outline

- Preliminary emissions estimates
- Proposed Refrigerant Management Program
- Existing regulations/gaps
- SCAQMD Rule 1415 data summary
- Issues for working group consideration
- Timeframe

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Today's agenda

10:00	Introduction
10:15	Staff presentation
11:00	Questions/discussion
11:30	Break
11:45	Continue discussion
12:45	Summary of action items + next steps
13:00	Adjourn

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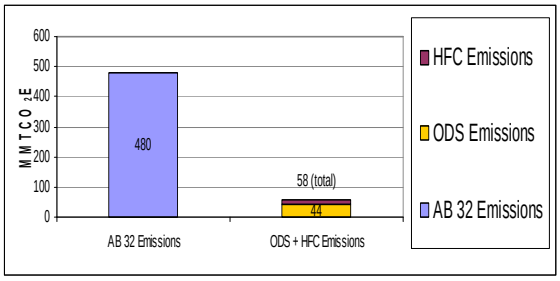
CA AB32 Inventory Emissions vs. High-GWP GHG Emissions (2004)



Note: HFCs are included in AB32 emissions and ODS is not.

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BAU Projections

California ($MMTCO_2E$)	2007	2020
High GWP emissions • ODS + HFCs	~57	~61
Stationary refrigeration/AC emissions	~30	~35

Based on US EPA Vintaging Model

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SCAQMD Rule 1415 Data Summary

- Biennial Report
- Data size
  - 2000 to 2001: 3,646 records, one for each piece of equipment, at 1,020 facilities
  - 2002 to 2003: 5,384 records at 1,370 facilities
  - 2004 to 2005: 5,770 records at 1,402 facilities
- 415 facilities show up in all three time periods
- 723 facilities show up in at least two time periods

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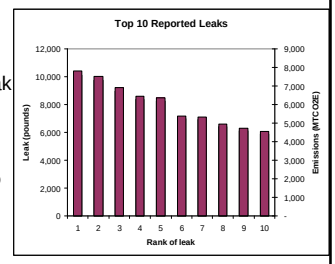
SCAQMD Top 10 Leaks (2004-05)

- All top 10 leakers are commercial food refrigeration systems
- For 11% of systems, leak rate exceeds 35%
- For 2.7% of systems, leak rate exceeds 100%



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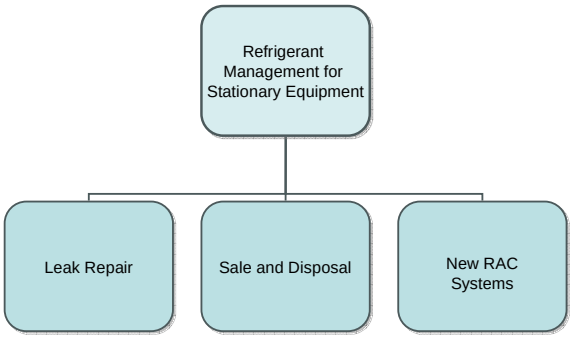
Proposed Refrigerant Management Program



Build on Existing Regulations

Sec 608 Regs	*SCAQMD 1415*	*Possible Provisions in New AB 32 Rule*
ODS	ODS	ODS + HFCs + PFCs
Appliances >50 lb refrigerant charge	> 50 lbs / RAC system	➢Refrigeration system> 50 lbs ➢A/C appliance > 30 lbs
Annualized monitoring	Class I ODS: annual audit Class II ODS: maintenance	1- Annual audit or 2- Initial audit + monitoring each recharge
Leak repair w/in 30 days: - 35% in I/C refrigeration - 20% in comfort cooling	Leak repair within 14 days for any leak	Any leak must be repaired or Lower leak repair thresholds
Time extensions for repairs	No flexibility	Flexibility for equipment retrofits
Recordkeeping only	Registration + biennial report	Registration/permitting + annual report Possibly less frequent for smaller facilities
No registration fee	$109/facility	Districts to permit facilities
No requirements for new equipment		•Specify technologies for new stores •Specify % reductions in 'carbon footprint'
Sales restriction on ODS	Fed rule	Extend to HFCs and PFCs
Reclaim required	Nothing specified	Safe disposal of refrigerant in equipment and cylinders
Technician Certification ODS	Refers to Fed rule	Extend to HFCs and PFCs

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Issues for Working Group Consideration

- Applicability
  - Size of equipment, systems, facilities
- Frequency of audits and reporting
- Leak repair
  - Prohibitions
  - Triggers
  - Time limits and extensions
  - Verification tests
- Specifications for new RAC systems
- New reporting for technicians, reclaimers
- Tracking system ease and completeness
- Sale restrictions and safe disposal

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Rule Applicability

Current 1415	Challenge	Options	Pros/Cons
>50 lbs per system	Is this out of date? Does this exempt important emission sources? Is this manageable for Districts and ARB? Is "system" open to interpretation, esp for A/C?	>15-30 lbs/system or appliance	Captures new walk-in coolers/freezers and rooftop units
		>x,000 sq ft/facility	Ease to calculate for smaller facilities
		GWP * Refrigerant Charge	Based on potential climate impact
		X lbs/HP(or BTU) per appliance	Recognizes energy interaction/challenge in establishing threshold
		Others	

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Facilities with Large Refrigeration/AC Systems May Be Affected

- Grocery stores/supermarkets
- Warehouses used for cold storage
- Food preparation/processing/service
- Office, commercial, and industrial buildings
- Hospitals and other medical facilities
- Military bases
- Institutions (schools, universities, laboratories, etc)
- Hotels, recreational facilities, etc
- Process cooling

We will consider different reporting criteria for large vs. small facilities

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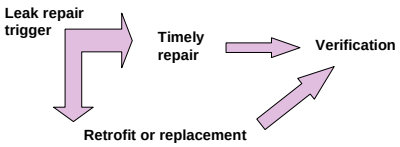
Leak Monitoring Follow-up Steps



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Frequency of Leak Tests

Current 1415	Challenge	Options	Pros/Cons
Audit/leak test: Once per year Registration report: Once every 2 years	Leaks can be missed	More frequent monitoring (e.g., biannual after 1st audit) and reporting (e.g., annual) in large facilities	Cost may be offset by savings in refrigerant and energy expenses
		Continuous monitoring in large facilities	Net savings in costs but technology may have limited availability
		Initial audit + monitoring at each recharge	Net cost savings but capital costs may be prohibitive for small businesses

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Potential Prohibitions for Leak Repair

- No top off without repair attempt
- No opening system w/o refrigerant recovery

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Leak Repair Trigger

Current 1415	Challenge	Options	Pros/Cons
Any leak in a system requires repair	May discourage monitoring	Any leak triggers repair	Greater emissions control
		Adopt or revise Federal triggers	More specific, eliminates selective repair
		>GWP emissions/ft^2 of facility or GWP emissions/linear ft of system	Direct measure of impacts; allows flexibility; novel approach would require technical justification
		Pounds (or GWP) emitted per energy use per appliance per facility	Allows flexibility and recognizes energy efficiency interaction; levels playing field; complex to enforce

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Leak Repair
Time Limits

Current 1415	Challenges	Options	Pros
Repairs must be completed within 14 days	1- Without compliance audits, main incentive is $ 2- May be impractical if new components needed	Within 30 days, with extensions as needed	Consistent with Federal regulation
		Within 14 days with extensions as needed	See next slide for extensions

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Leak Repair
Extensions

Current 1415	Challenges	Options	Pros
No exemptions or extensions	Discourages compliance and encourages recharge of leaky equipment	Allow more time to retrofit or replace equipment and require implementation plan within e.g., 6 months	Consistent with Federal regulation; lower leak rate trigger will push replacements; plan should standard practice
		Allow more time for component delivery	Consistent with Federal regulation

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Verification of Repairs

Current 1415	Challenge	Options	Pros/Cons
No verification required – Fed rule applies to industrial refrigeration equipment only w/no time specified	No guarantee of repair	Initial and follow-up verification (e.g., after 24 hours) of repair required for large systems; test under operating conditions	Helps to insure that repairs are made and are effective Requires more follow-up but can be done with routine test Flexibility to allow simple screening
		Immediate verification	One visit but may not be enough to allow system to equilibrate

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New Commercial Food Refrigeration Systems

- Parallel Early Action Measure

  Goal: promote new commercial food refrigeration technologies to reduce GHG emissions and banks

- ARB is considering combined rule but allow adequate time for manufacturers and stores to prepare

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Options for New Commercial Food Refrigeration Systems

- Would apply to large facilities
- Retrofits
  - X% reduction in GWP * charge size
  - Energy efficiency upgrades
- New Stores, e.g.,
  - "Carbon footprint" for new systems
  - Technology options
  - Reduction targets from baseline GHG emissions
    - Different baselines for different store categories/case lengths/refrigerated food area
    - Energy use
    - Refrigerant charge GWP

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Who Would Need to Report?

- Facility owners
- Contractors/Technicians
- Reclaimers and recyclers
- Wholesalers/Distributors and Parts Houses

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Facility Information to Collect

(bold currently collected under SCAQMD Rule 1415)

- Facility general information (including **SIC** & **NAICS**)
- **Refrigerant**
- **System types, make/models**, and capacities
- **Refrigerant use**
- **Energy use**
- Maintenance and audit records
- Leak/repair/retest records
- Monitoring system
- Certified technician info

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Reporting: Contractors/Technicians

- Amount and type of refrigerant purchased
- Service jobs (invoice info)
  - Site and date
  - Amount/type of refrigerant charged into and recovered from equipment
- Disposition of all recovered refrigerant
  - Where did it go
  - How much

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Reporting: Reclaimers/Recyclers Wholesalers/Parts Houses

- Date, amount, and type of refrigerant received (from contractors)
- Date, amount, type of refrigerant sent to reclaimers
- Date, amount, type of refrigerant recycled

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End-of-Life Emissions

- Despite Federal requirements, <3% of HCFC-22 refrigerant is reclaimed in the US
- "Empty" cylinders are not empty
- Lack of economic incentive to recover and return gas

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Potential Solutions

- Cylinders
  - Ban disposal of cylinders without recovery by certified reclaimer
    - Require deposit on refrigerant cylinders used for servicing
    - Deposit would be returned when technician returns empty or a filled cylinder with recovered refrigerant
  - Ban use of "1-way" cylinders
    - Same done in EU,UK, Australia
- Fee on sale of high-GWP refrigerant
- Expand/enforce Federal recovery requirements for disposed appliances and other equipment

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Ongoing Analyses

- Potential emission reductions from different sources
- Economics of leak detection
- Appliance/system size threshold
- Economics and practicality of a cylinder deposit program
- Feasibility of alternative cylinder programs
  - Ban on non-refillables
  - Ban on disposal without certified recovery
- Costs/feasibility/benefits of new RAC technologies

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Rule Development (Preliminary Schedule)

Spring/ Summer	Fall/Winter	Jan-Feb 2009	March-April 2009
1. CAPCOA and Public Working Group Meetings to discuss policy options 2. Economic and inventory analyses 3. Develop statewide tracking system 4. Release draft regulation for public review	1. CAPCOA and Public Working Group meetings 2. 1st statewide public workshop 3. Release technical chapters of staff report for public review 4. AB 32 Scoping plan delivered to Air Board	1. 2nd statewide public workshop 2. Release staff report and public notice 45 days prior to Board hearing	Board hearing and rule adoption

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Potential Implementation Sequencing

Statewide Database	Dec 2008
District Adoption	Late 2009
Facility Permit & Initial Audits	Early-Mid 2010
Update Technician Certification	Early-Mid 2010
Cylinder Controls/Deposit-Rebate	2011
New RAC Systems	Post 2012

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Contact Info

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